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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/917,139  | 07/26/2001  | Mihrimah Ozkan       | UCSD 2001-014       | 2237             |
| 20985   | 7590        | 08/09/2004           | EXAMINER            |                  |
| FISH & RICHARDSON, PC<br>12390 EL CAMINO REAL<br>SAN DIEGO, CA 92130-2081 |             |                      | HASHMI, ZIA R       |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2881                |                  |
| DATE MAILED: 08/09/2004   |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/917,139

Applicant(s)

OZKAN ET AL.

Examiner

Zia R. Hashmi

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/14/2003</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2 and 18 are rejected under U.S.C. 102(b) as being anticipated by Hang et al. ( 6,399,936 ).

3. With respect to independent claim 1 and dependent claims 2 & 18, Hang et al. disclose optical tweezers ( col. 14, lines 33-38 ) using laser light comprising: at least one Vertical Cavity Surface Emitting Laser, or VCSEL, supplying the laser light ( col. 6, lines 46-49 and 32 in Fig. 2A & 2B ). Their optical tweezers also comprises an array of VCSELs ( col. 6, lines 56-57 and 32 in Fig. 2A & 2B ).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 9, 17, 21, 24, 27, and 29, are rejected as being unpatentable over Grier et al. ( 6,624,940 ), in view of Hang et al. ( 6,399,936 ).

6. With respect to independent claims 9, 17, 21, 24, 27, and 29, Grier et al. disclose

a method of optically trapping and tweezing of particles ( Abstract, lines 1-2, col. 1, lines 29-40 & 52-61, col. 3, lines 37-40, and 10 & 12 in Fig. 1 ). They also disclose a stage supporting a plurality of optically manipulative objects and a plurality of laser light beams for manipulating the plurality of objects supported upon the stage ( col. 1, lines 29-40, col. 3, lines 37-40, 50-51 & 66-67, col. 5, lines 50-57, and 34 in Fig. 5 ), and a source of laser light which can have a Laguerre-Gaussian beam profile ( col. 4, lines 3-12 ).

7. With respect to claims 3-17 and 19-32, Grier et al. fail to disclose use of VCSELs as sources of optical forces. Hang et al. however, disclose single as well as arrays of VCSELs, which can be used to optically manipulate particles ( col. 6, lines 40-63, col. 14, lines 33-38, and Fig. 3A,3B ).

Thus, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to combine the methods and apparatus of Hang and Grier et al. and add features like intensity-controlled laser beams or electric field to manipulate particles ( latter well known in many arts ) along with optical forces, because Grier et al. teach ( col. 1, lines 31-33 ) that to manipulate multiple particles, multiple beams of light must be employed.

#### Conclusion

8. Walt et al. disclose ( US 2002/0032204 A1 ) an optical device and methods of use for screening, analysis and manipulation of particles by a controllable optical array of fibers.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact Electronic Business Center (EBC) at 866-217-9197 (toll-free).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zia Hashmi whose telephone number is (571) 272-2473. The examiner can normally be reached between 8.30 AM- 5 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477.

Zia Hashmi

July 26, 2004



JOHN R. LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800